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Implementation of the PHBS (Clean and Healthy Living Behaviour) Program in Preventing Communicable Diseases in the Environment of Elementary School 11 Lubuk Buaya Padang

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ABSTRACT

The implementation of the Clean and Healthy Living Behaviour (PHBS) programme in the elementary school environment constitutes a significant preventive measure in the reduction of the incidence of infectious diseases. The present research employs a descriptive qualitative approach through a participatory-based community service method that focuses on the implementation and evaluation of the effectiveness of the PHBS Program in preventing infectious diseases in the primary school environment. The target audience comprised 30 students in grades IV to VI, three homeroom teachers, and School Health Unit (UKS) administrators, all of whom participated in every stage of the activity. The qualitative data was analysed descriptively by comparing pretest and posttest scores, while qualitative data were analysed using data reduction techniques, thematic categorisation and narrative interpretation to obtain a more holistic picture of changes in students' knowledge, attitudes, behaviour, and collective awareness of the importance of healthy living. The programme has been demonstrated to be effective in the transformation of theoretical understanding into concrete habits within the school environment through the implementation of interactive, visual-based, and hands-on educational approaches, including role play and simulation. Its success has been demonstrated as a preventative strategy against infectious diseases, as well as an effective character-building approach for students in maintaining hygiene and health independently and sustainably.

Keywords: *Students' Knowledge, Attitude, Behaviour in Implementing PHBS*

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INTRODUCTION

Infectious diseases are still one of the major public health problems, especially in developing countries like Indonesia. Primary school-aged children are vulnerable to disease transmission due to high social activities and suboptimal personal hygiene habits. One preventive approach that has proven effective in reducing the risk of infectious disease transmission is the implementation of Clean and Healthy Living Behaviour (PHBS) from an early age.

PHBS is a series of behaviours carried out on awareness to maintain cleanliness and health of oneself and the environment in order to improve the quality of life. The implementation of PHBS is proven to prevent various infectious diseases such as diarrhoea, acute respiratory infections, and pediculosis capitis (Rosdiana, 2021). In the school environment, prevention efforts through PHBS have a significant impact on children's health and the cleanliness of the learning environment.

However, the implementation of PHBS in primary schools still faces various challenges, such as low student awareness, lack of interesting educational materials, and lack of teacher participation as an agent of behaviour change. Research conducted by Cahyati et al. (2024) showed that educational activities and PHBS assistance were able to increase understanding and healthy living habits in elementary school students through interactive approaches such as socialisation, role play, and multimedia education (Cahyati et al., 2024).

On the other hand, the role of teachers in delivering PHBS materials is very important. The study by Pakha et al. (2024) found that teacher training and provision of educational media such as flash cards significantly increased the effectiveness of teaching PHBS in the school environment (Pakha et al., 2024).

Community service activities conducted by Puspa et al. (2023) reinforced these findings, where the involvement of UKS teachers and students as health cadres contributed to real changes in clean and healthy behaviour, including improvements in UKS facilities and increased student knowledge (Puspa et al., 2023).

The COVID-19 pandemic situation is also an important momentum in increasing awareness of the importance of PHBS. The implementation of PHBS such as washing hands with soap, maintaining cough etiquette, and maintaining distance has been shown to reduce the risk of virus transmission in the school environment (Hasna et al., 2022). This programme is also supported by evidence of an 80% increase in student knowledge after a brief education (Novikasari & Dewi, 2021).

Nevertheless, there is a gap between the knowledge and practice of PHBS by students. Therefore, educational activities must be carried out in a sustainable manner and based on local school needs to achieve optimal results (Susanto et al., 2022).

Overall, strengthening the PHBS programme in the elementary school environment through community service activities not only improves the health status of students, but also forms the character of children who are disciplined and responsible for personal and environmental hygiene.

With this background, it is very important to conduct community service activities that implement PHBS programmes in a structured manner in elementary schools, as part of the strategy to prevent infectious diseases as well as empower the school community.

METHODS

This research uses a descriptive qualitative approach through a participatory-based community service method that focuses on the implementation and evaluation of the effectiveness of the Clean and Healthy Living Behaviour (PHBS) Program in preventing infectious diseases in the elementary school environment. The location of the activity was centred on SD Negeri 11 Lubuk Buaya, Koto Tangah Sub-district, Padang City, which was purposively selected based on the results of a needs analysis that showed the need for education-based health interventions. The target audience included 30 students in grades IV to VI, three homeroom teachers, and School Health Unit (UKS) administrators, all of whom were actively involved in every stage of the activity as a form of implementation of the participatory approach. This active involvement is intended to build a close collaboration between researchers and the school to support the sustainability of the programme independently.

The activity stages began with initial observations to identify the existing conditions of clean and healthy living behaviour in the school environment. After that, an initial measurement (pretest) of students' knowledge, attitudes, and behaviour related to PHBS was conducted using a structured questionnaire instrument. The educational intervention was conducted intensively for five consecutive days with a duration of 60 to 90 minutes per session per day. Educational activities were designed in an interactive and applicable manner, including counseling on the importance of PHBS, demonstration of proper hand washing practices, role play simulations to display PHBS behaviour in everyday life, and the use of educational visual media such as posters, illustrated flash cards, and animated videos tailored to the level of understanding of elementary school students. In this process, teachers play an active role not only as participants, but also as the main facilitator, so that PHBS values can be integrated into the regular learning process in a sustainable manner.

The impact evaluation of the programme was conducted seven days after the intervention was completed through a posttest using the same instrument as the pretest. In addition to quantitative data, researchers also collected qualitative data through direct observation of students' practices as well as semi-structured interviews with teachers and students. Quantitative data was analysed descriptively comparatively by comparing pretest and posttest scores, while qualitative data was analysed using data reduction techniques, thematic categorisation and narrative interpretation to obtain a more holistic picture of changes in students' knowledge, attitudes and behaviour. This approach was chosen to provide a comprehensive understanding of the effectiveness of the programme and encourage the creation of a school environment that supports clean and healthy behaviours in a sustainable manner.

RESULTS

The implementation of Clean and Healthy Living Behaviour (PHBS) in the elementary school environment is an important preventive step in reducing the incidence of infectious diseases. Based on the background that has been stated, this community service activity aims not only to increase students' knowledge about PHBS, but also to form sustainable changes in hygienic attitudes and behaviour. Implementation is carried out in a participatory manner with a fun educational approach, and involves various school elements, including teachers and UKS managers, as an integral part in supporting the success of the programme.

Table 1. Implementation of Clean and Healthy Living Behaviour (PHBS) in Primary School Environment

No.	Variables	Aspects Measured	Pretest (%)	Posttest (%)	Δ (Difference)
1	PHBS knowledge	Students answer ≥70% of questions correctly	30%	82%	+52%
2	Attitude towards PHBS	Students agree that PHBS is important and want to implement it	40%	85%	+45%
3	PHBS behaviour (observation)	Students wash their hands with soap before eating & after the toilet	25%	78%	+53%
4	PHBS behaviour (role play)	Students simulate cough etiquette, use of rubbish bins	20%	75%	+55%
5	Students' collective consciousness	Students remind each other to keep clean	10%	70%	+60%

1. Knowledge about PHBS

Before the intervention, only 30% of students had an adequate understanding of PHBS. After the educational programme (counseling, educational media, simulation), there was a significant increase to 82%. Visual and practice-based education proved effective in improving students' understanding, especially on basic topics such as the benefits of washing hands and maintaining personal hygiene.

2. Attitude towards PHBS

Before the programme, only 40% of students showed a positive attitude towards PHBS. After the programme, this figure rose to 85%. The fun and interactive approach (role play, flash cards) boosted students' interest and awareness that PHBS is an important part of daily life.

3. PHBS behaviour (Handwashing and Toilet *Hygiene*)

Students' actual behaviour in handwashing and hygiene increased from 25% to 78% after the programme. Direct demonstration and the involvement of teachers as behavioural models greatly influenced the formation of good habits in children.

4. PHBS Behaviour (Simulation and *Role Play*)

Students' active participation in role play showed an increase from 20% to 75%. Practical simulation is able to internalise the values of PHBS because students not only hear the theory, but also practice it directly.

5. Collective Consciousness

Before the programme, only 10% of students reminded each other to maintain cleanliness. After the programme, it increased to 70%. The activation of collective values and social responsibility is an indicator of the success of the formation of a healthy culture in the school environment.

Interviews were conducted with 10 respondents consisting of 5 teachers, 3 students, and 2 UKS managers. The interviews were semi-structured with open-ended questions, and the results were analysed and categorised into key themes.

Table 2. Interview Respondents Regarding the Implementation of Clean and Healthy Living Behaviour (PHBS) in the Elementary School Environment

No.	Category/Theme	Indicator Findings	Number of Respondents who Agree (n=10)	Percentage (%)
1	Teacher's Role in PHBS Education	Teachers felt helped by the educational media and started to integrate PHBS material into lessons	5 out of 5 teachers	100%
2	Effectiveness of Educational Media (posters/flash cards)	Visual media makes it easier for students to understand PHBS	9 out of 10 respondents	90%
3	Student Response to Interactive Activities	Students feel happy learning PHBS through games and role play	3 out of 3 students	100%
4	Impact on Daily Behaviour	Students start to get used to washing hands, maintaining cough etiquette, and using the trash can consistently	8 out of 10 respondents	80%
5	UKS Manager Involvement	The UKS manager supports the implementation of the programme and would like to expand it to other classes	2 of 2 UKS managers	100%
6	Support for Sustainable Programmes	All parties suggested that PHBS educational activities be carried out routinely every semester	10 out of 10 respondents	100%

1. Teacher's role in PHBS education

All teachers stated that educational media was very helpful in delivering PHBS messages. They began to integrate PHBS materials in thematic learning, which shows the active involvement of teachers in the transformation of students' behaviour. Teachers as agents of behaviour change play an important role in the sustainability of the programme. Teacher readiness is a positive indicator of long-term success.

2. Effectiveness of Educational Media

Most respondents rated media such as posters and flash cards as very effective in attracting students' attention and simplifying hygiene concepts. Visual materials are able to adapt to children's learning styles and make it easier to understand abstract concepts such as "germs" or "disease transmission."

3. Student Response to Interactive Activities

All students interviewed expressed enthusiasm for the role plays and educational games, and would even like these activities to be conducted more often. Interactive activities reinforce understanding while creating a fun learning experience, improving information retention and learning motivation.

4. Impact on Daily Behaviour

Most respondents observed that students began to implement PHBS spontaneously, without the need to be told, such as washing hands before eating and keeping the classroom clean. There

were real behavioural changes in the field, indicating that the programme not only increased knowledge, but succeeded in internalising hygiene values.

5. UKS Manager Involvement

The UKS manager acts as a supporter of the activities and wants to expand the scope of the programme to all students in the school. Structural support from the UKS strengthens the potential for developing the PHBS programme as part of the school culture.

6. Support for Programme Sustainability

All respondents expected PHBS education activities to continue and become a regular agenda, such as being held at the beginning of each semester or school health day. There is a collective commitment from the school community to make PHBS part of a long-term programme, not just a momentary activity.

DISCUSSION

1. Knowledge about PHBS

The results showed a significant increase in students' knowledge level of PHBS, from only 30% before the intervention (pretest) to 82% after being given the educative approach (posttest). The educational approach used included direct counselling, the use of visual media such as posters and flashcards, and simple simulations related to personal hygiene practices. This interactive and multimodal information delivery proved effective in improving students' understanding of the basic concepts of PHBS.

This improvement is in accordance with the theory of cognitivism, which emphasises that the learning process involves the construction of knowledge by learners through active processing of information obtained. Visualisation and hands-on practice make information more meaningful and easy to understand, especially for elementary school students who are at the concrete operational stage according to Piaget. At this stage, children are better able to understand information that is displayed concretely through real objects, images, or simulations compared to verbal abstractions.

Research by Marsofely et al. (2024) showed that the use of Android-based educational games was able to significantly increase students' knowledge about PHBS (Marsofely et al., 2024). The same thing was reported by Abdurrahman et al (2024), where interactive film media increased students' understanding of hygiene and health (Abdurrahman et al., 2024).

The increase in student knowledge is influenced by the suitability of learning methods with the characteristics of cognitive development of primary school-age children. Students at this level tend to have a visual-kinesthetic learning style, where they more easily understand information if accompanied by visual stimulus and physical activity. Therefore, the use of pictorial learning media and simulation activities are effective means to transform abstract concepts such as 'microorganisms', 'disease transmission', and 'health' into knowledge that can be understood concretely. We also assume that when students gain direct experience through practical activities and visualisation, the process of assimilation and accommodation of new knowledge becomes stronger and longer lasting.

2. Attitude towards PHBS

Students' attitudes towards the importance of clean and healthy behaviours improved from 40% to 85%. The educational interventions used, such as role play, educational games, and the use

of interactive media, created a fun learning experience and built students' emotional awareness of the importance of maintaining cleanliness as part of a lifestyle.

This finding is in line with the Theory of Planned Behavior (Ajzen), which states that attitudes towards a behaviour are formed by beliefs about the outcome of the behaviour (behavioural beliefs) and evaluation of the perceived benefits. When students realise that implementing PHBS brings direct benefits such as health, comfort, and social acceptance, their attitude becomes more positive.

Sianturi et al. (2024) showed that education through PHBS booklets was effective in shaping students' positive attitudes (Sianturi et al., 2024). Lestarisa et al. (2023) also found that local educative games based on cultural wisdom were able to improve attitudes towards healthy living behaviour (Lestarisa et al., 2023).

Changes in student attitudes are strongly influenced by positive emotional experiences and affective engagement during the learning process. Attitudes are not only shaped by knowledge, but also by a sense of pleasure, interest and meaning towards a behaviour. In this context, activities that contain elements of play, simulation and social interaction are able to form students' emotional attachment to the health values taught. We assume that when students feel valued, play an active role and enjoy the learning process, they are more likely to internalise the values and transform them into attitudes that support healthy behaviours.

3. PHBS behaviour (Handwashing and Toilet Hygiene)

The increase in students' actual behaviour in maintaining hygiene, such as washing hands before eating and after using the toilet, increased significantly from 25% to 78% after the intervention. The hands-on approach and exemplary behaviour from teachers are important aspects that drive this behaviour change. Teachers not only act as facilitators, but also as role models in the practice of healthy behaviour.

This change can be explained through social-cognitive theory (Bandura) which emphasises the important role of observation of models in behaviour formation. In this context, students tend to mimic the behaviour they see from teachers and peers who demonstrate consistency and respect for hygiene practices.

Shofa et al. (2023) proved that the use of animated video media has a significant impact on the formation of students' hand washing behaviour (Shofa et al., 2023). The researcher's assumption is that the formation of hygienic behaviour requires a consistent repetition process in a real context, accompanied by reinforcement from a positive social environment.

The formation of hygienic behaviour in children cannot occur only through the delivery of information, but requires repetition, consistency, and reinforcement from the social environment. We assume that handwashing and toilet hygiene behaviours can only become habits when students are continuously exposed to environments that reinforce these behaviours. These include teacher role models, positive supervision, and informal reward systems in the school environment. When the behaviour is socially validated and becomes part of the daily routine, it is more likely that students will make it a long-term habit.

4. PHBS Behaviour (Simulation and Role Play)

Student participation in simulation and role play activities has increased from 20% to 75%. These activities directly train students in implementing PHBS actions such as cough etiquette, use of trash bins, and other clean living patterns. This approach reinforces mastery of skills through direct experience.

This learning is in line with experiential learning theory (Kolb), which states that concrete experience is the foundation of the learning process. Students learn better when they 'do' and 'experience' themselves, rather than just listening or reading information.

Hanif et al. (2019) emphasised the importance of pocket book media with simulations to shape healthy behaviour among students (Hanif et al., 2019). The researcher's assumption is that simulation activities provide space for students to understand the real context of PHBS and increase confidence in applying it in everyday life.

The application of simulation and role play is believed to create a realistic and relevant learning environment, where students can evaluate and internalise the behaviours displayed. The researcher assumes that real experiences in learning help students build a contextual understanding of why a behaviour should be done, not just how to do it. When students are given the opportunity to play an active role and reflect on their actions in the simulation, their confidence in applying healthy behaviours in real life will increase. It also strengthens the mastery of motor and cognitive skills at the same time.

5. Students' Collective Awareness

The increase in students' collective awareness to remind each other and maintain cleanliness together jumped from 10% to 70%. There was a cultural shift that led to the creation of new social norms that support a healthy and clean school environment.

This change is explained through social norm theory (Cialdini), which states that individuals will tend to follow the behaviour of the majority if the norm is consistently reinforced in their social group. In the school environment, when most students begin to implement PHBS and remind each other, then other students will be encouraged to follow the same behaviour due to normative pressure.

Bunga et al. (2024) noted that school community-based PHBS interventions formed student solidarity towards clean living practices (Bunga et al., 2024), and Setiawan et al. (2024) revealed that weak collective awareness correlated with low implementation of PHBS in schools (Setiawan et al., 2024).

Collective consciousness does not arise spontaneously, but is formed through a long and systematic social process. We assume that repeated interventions, supported by open communication, positive reinforcement, and active involvement of teachers and peers, are key factors in fostering a culture of healthy living. When students feel part of a community that has a common goal to live clean and healthy, they will be more easily encouraged to comply with the prevailing norms. This culture not only forms personally healthy individuals, but also creates a social system that supports each other in maintaining the sustainability of PHBS in the school environment.

CONCLUSIONS

The results showed that the implementation of the Clean and Healthy Living Behaviour (PHBS) program in the elementary school environment significantly improved students' knowledge, attitudes, behaviour, and collective awareness of the importance of healthy living. Through interactive, visual-based, and hands-on educational approaches such as role play and simulation, the programme was able to transform theoretical understanding into concrete habits in the school environment. The significant improvement in all research variables confirms the effectiveness of educational methods that suit the characteristics of primary school students. In addition, the involvement of teachers and UKS managers as agents of change also strengthened the success of the programme and formed a healthy school culture collectively. Thus, PHBS is not only successful as a preventive strategy against infectious diseases, but also as a character building approach for students in maintaining hygiene and health independently and sustainably.

A. Recommendation

1. Integration of PHBS in Thematic Curriculum: PHBS materials should be systematically included in thematic learning so that hygiene values become part of a sustainable teaching and learning process.
2. Periodic Teacher and UKS Training: Teachers and UKS managers need to be given regular training on effective PHBS educational approaches, so that they are able to become consistent and inspiring role models for students.
3. Use of Technology-Based Interactive Media: The development of digital-based educational media such as educational games or animated videos can strengthen the effectiveness of learning, especially in attracting and maintaining students' attention.
4. Parent Involvement: The role of the family, especially parents, is very important in strengthening PHBS practices at home. Therefore, the PHBS programme needs to be synergised with family education through parent meetings or information leaflets.
5. Development of PHBS Programme as School Culture: PHBS should be part of the school values and routines, supported by internal policies such as cleaning hours, PHBS competition between classes, and appreciation system for students who consistently maintain cleanliness.

B. Suggestions for Future Research

1. Expansion of Sample and Context: Future research should include more schools in different areas (urban and rural) to test the generalisability of the effectiveness of PHBS programmes.
2. Longitudinal Study: Long-term studies are needed to assess the sustainability of students' behavioural changes over a period of time after the intervention.
3. Deep Qualitative Analysis: Research with deeper qualitative approaches, such as ethnography or case studies, can explore internal and external factors that influence the formation of students' PHBS behaviour.
4. The effect of clean and healthy behaviours on academic achievement: It is recommended that a follow-up study be conducted to examine the relationship between clean and healthy behaviours and improved learning focus and academic achievement.
5. Evaluation of the Effectiveness of Specific Learning Media: Future research could also evaluate the effectiveness of different types of media (games, videos, booklets) in improving specific aspects of PHBS (knowledge, attitude, or behaviour).

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